Mammalian Transcription Factor Networks: Recent Advances in Interrogating Biological Complexity.

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Public Summary:
Transcription factor (TF) networks are a key determinant of cell fate decisions in mammalian development and adult tissue homeostasis and are frequently corrupted in disease. However, our inability to experimentally resolve and interrogate the complexity of mammalian TF networks has hampered the progress in this field. Recent technological advances, in particular large-scale genome-wide approaches, single-cell methodologies, live-cell imaging, and genome editing, are emerging as important technologies in TF network biology. Several recent studies even suggest a need to re-evaluate established models of mammalian TF networks. Here, we provide a brief overview of current and emerging methods to define mammalian TF networks. We also discuss how these emerging technologies facilitate new ways to interrogate complex TF networks, consider the current open questions in the field, and comment on potential future directions and biomedical applications.

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